



Evidence-based Courseware Improvement with **Open**Simon Analytics

Norman **Bier**

EXECUTIVE DIRECTOR, THE SIMON INITIATIVE
DIRECTOR, OPEN LEARNING INITIATIVE

Erin **Czerwinski**

PRODUCT and COMMUNITY MANAGER, THE SIMON INITIATIVE

Candace **Thille**

ASSOCIATE PROFESSOR of EDUCATION, STANFORD UNIVERSITY
DIRECTOR of LEARNING SCIENCE and ENGINEERING, AMAZON

OPEN
SOURCE



LEARNING
ENGINEERING
ECOSYSTEM

OPEN SOURCE
LEARNING



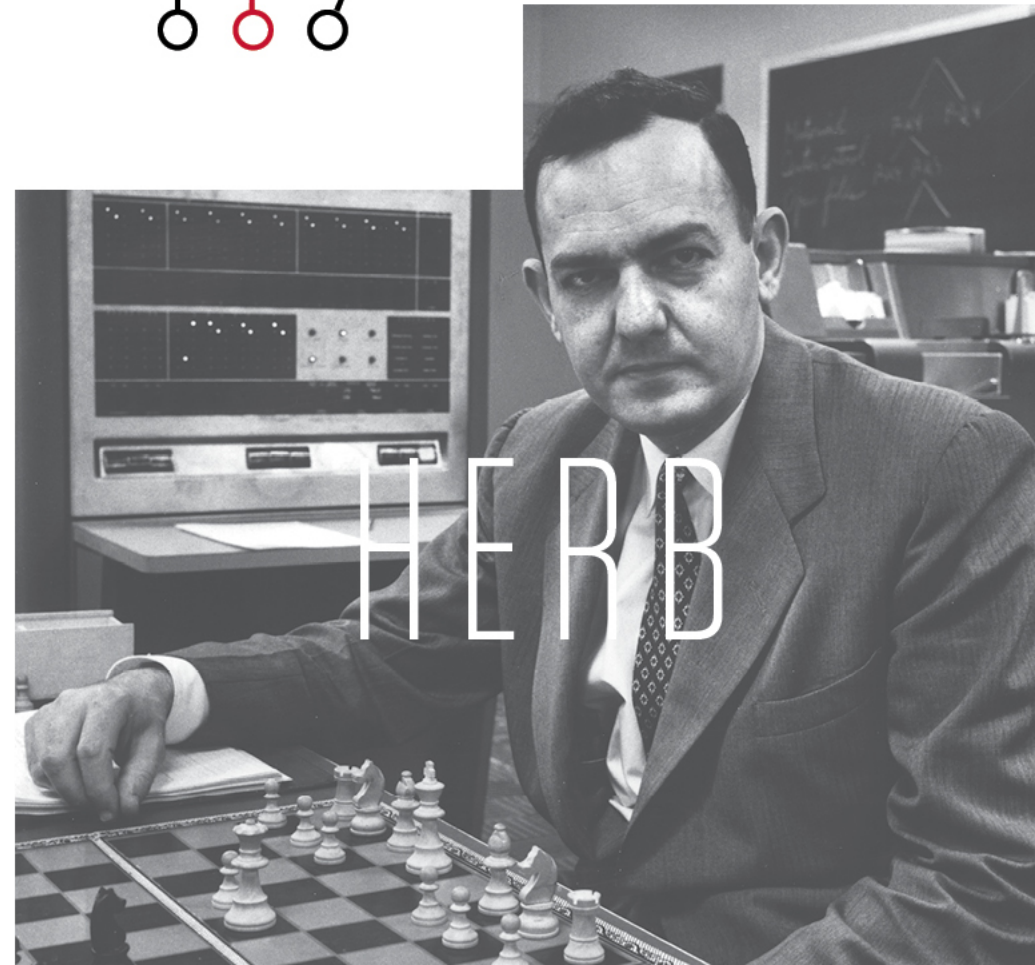
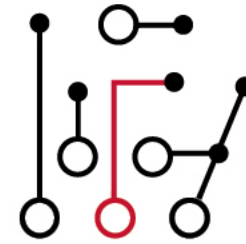
HACKATHON

Carnegie Mellon University
The Simon Initiative

“Improvement in post-secondary education will require converting teaching from a solo sport to a community-based research activity.”



DATA
EMPOWERED
LEARNING

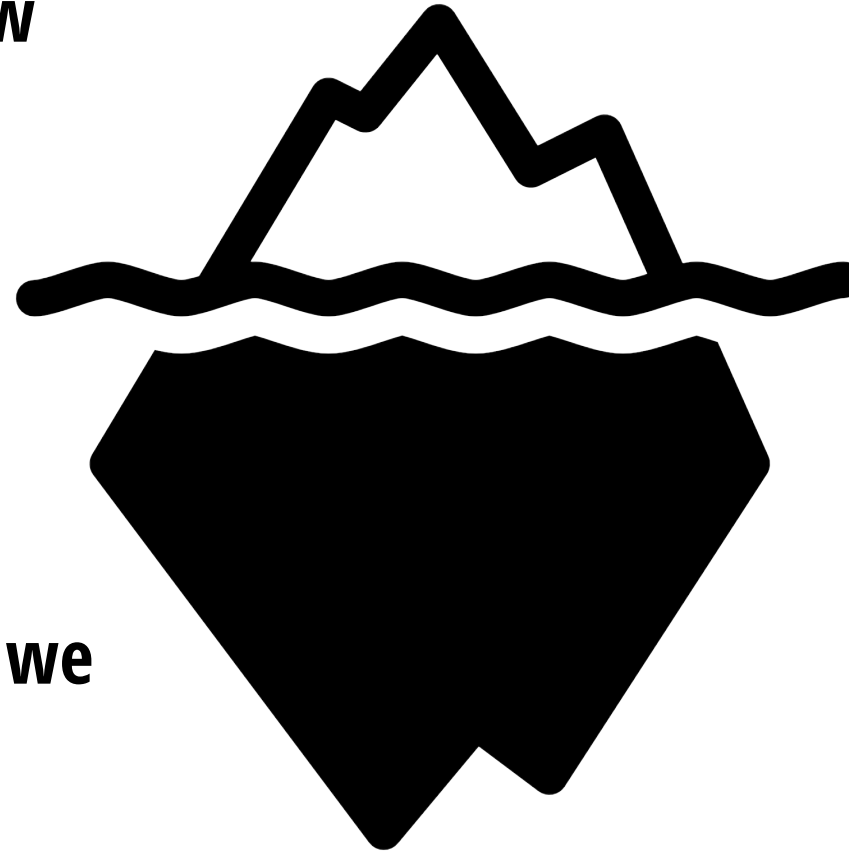


How do we design and improve learning?

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Intuition-based design *lacks information*

What we know
about our
own learning



What we
do not know we
know

Experts can
describe only
30% of what
they know!

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Data breaks illusions



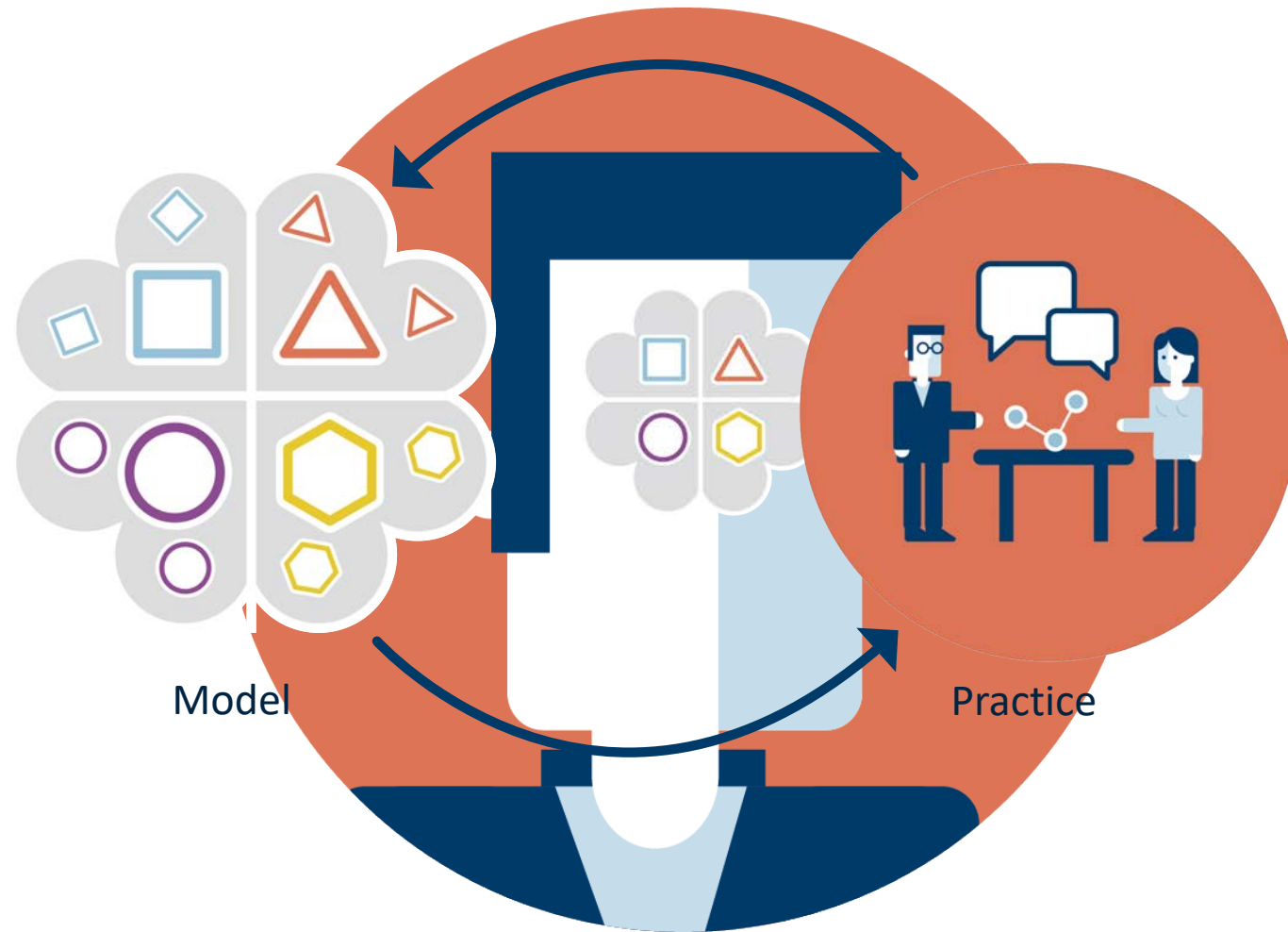
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Making learning something you can observe

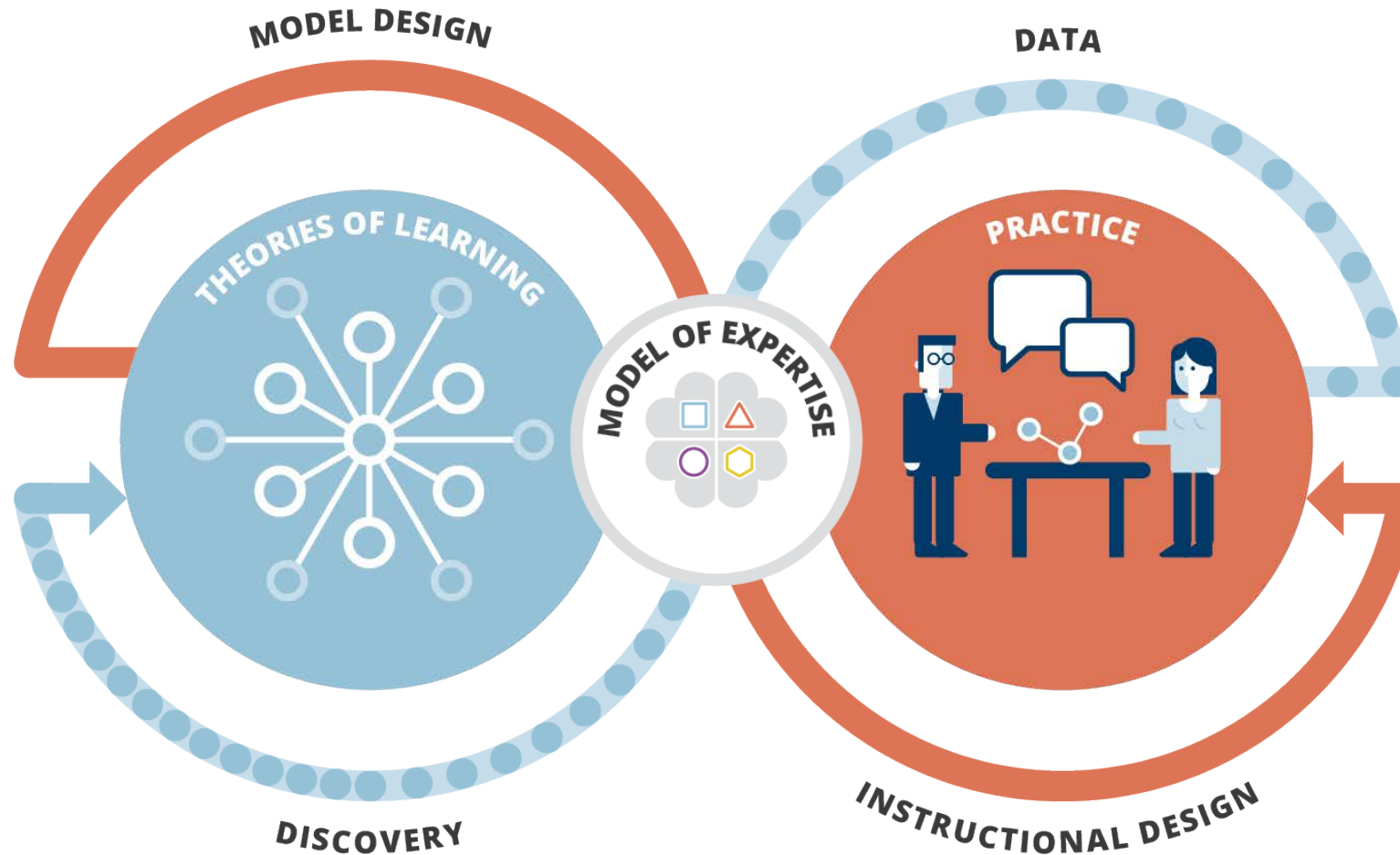


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Making learning something you can observe

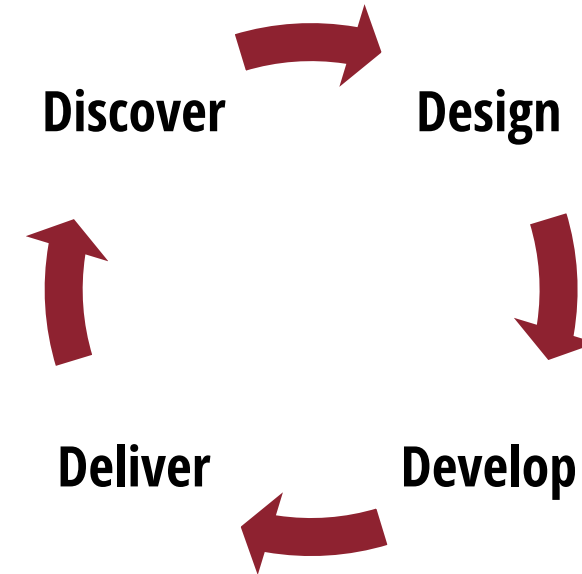
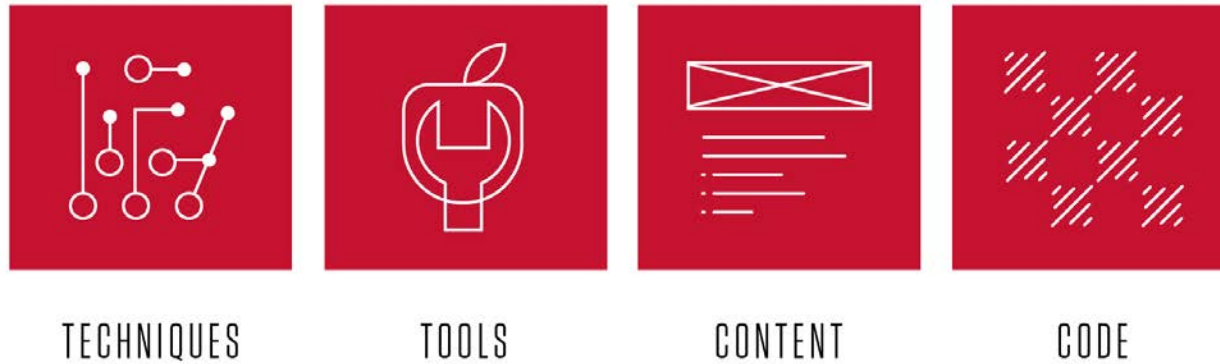


The Simon Approach: Learning Engineering



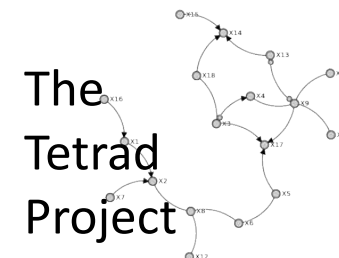
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OpenSimon Toolkit



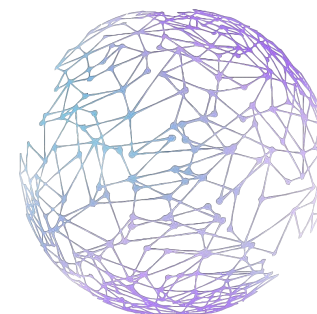
to support *applying* learning engineering
to the life cycle of educational projects

From tools...



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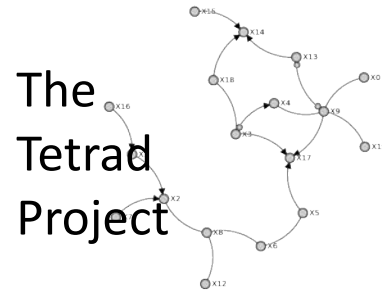


LearnSphere

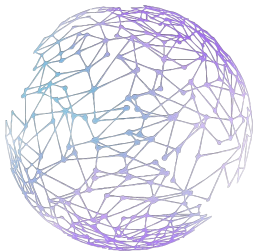


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...to ecosystem



Your Tools and Approaches



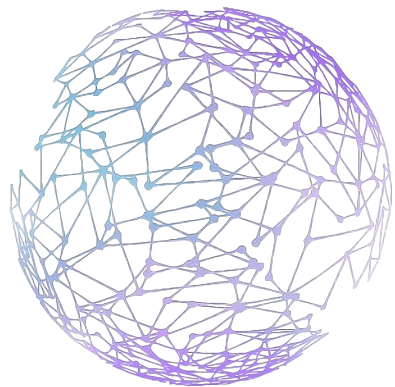
LearnSphere

INTEGRATION + INTEROPERABILITY BACKBONE



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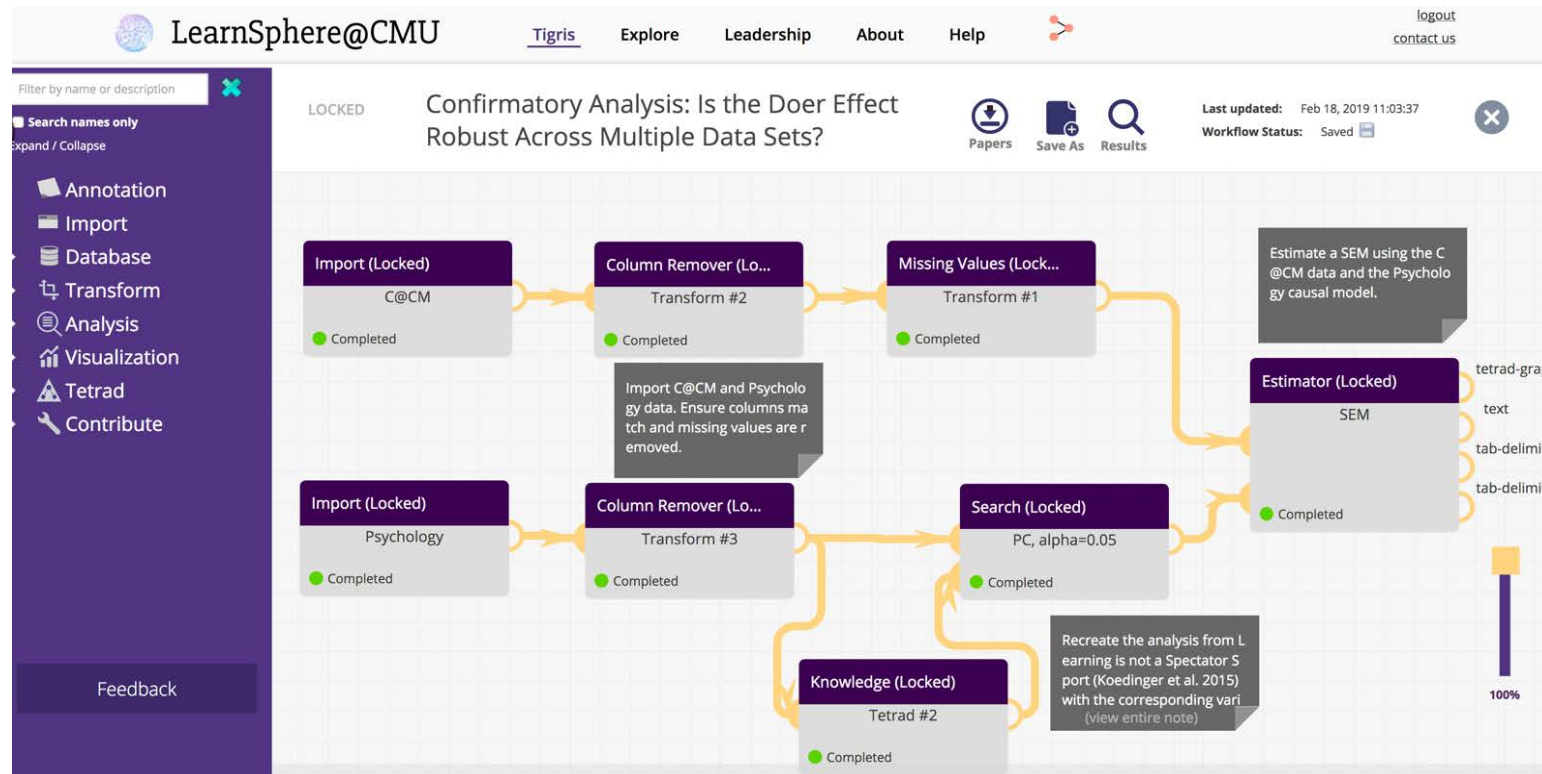
LearnSphere



**Open Learning
Initiative**

Carnegie Mellon University

LearnSphere



- Shared educational datasets and analytic methods
- Workflow tools:
 - Data transformation
 - Analysis
 - Visualization
- Causal Modeling

<http://learnsphere.org>

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Scientifically-based, open, online-learning environments based on the **integration of technology, the science of learning and teaching.**

OLI is designed to simultaneously improve learning and facilitate learning research.

Unit 11: Complex Interactions Between Bodies

Complex

Statistically Significant Levels

Applications of Physics

Search this content

Module 3 / Use Symmetry to Reduce 3-D to 2-D

24

LEARNING OBJECTIVES

The symmetry to reduce three-dimensional situations to two-dimensional representations.

Replacing two equal forces with a statically equivalent force midway between them is an important element in reducing 3-D problems to 2-D problems. A reduction from 3-D to 2-D requires both the body and the forces acting on it to be symmetrical about the same plane.

Consider **pushing the box** on the floor. Even though the box has three planes of symmetry $y-z$, $x-z$, and $x-y$, each cutting the box in half, the forces acting on it are symmetrical only about the $x-y$ plane.

We would find the forces F_{hand} and F_{wheel} in terms of the known weight W and geometry using equilibrium.

did I get this

This float is carried by four people that are equally spaced along each side. The platform is rectangular, and the statues are placed on it.

Can this 3-D problem be modeled in 2-D? If so, in which plane?

The $y-z$ plane cuts the statues in half, so the statue weights act in the plane; the weight of the platform also acts in this plane. The weights of the statues are not symmetric with respect to the $x-y$ plane.

Good job!

☐ NEXT

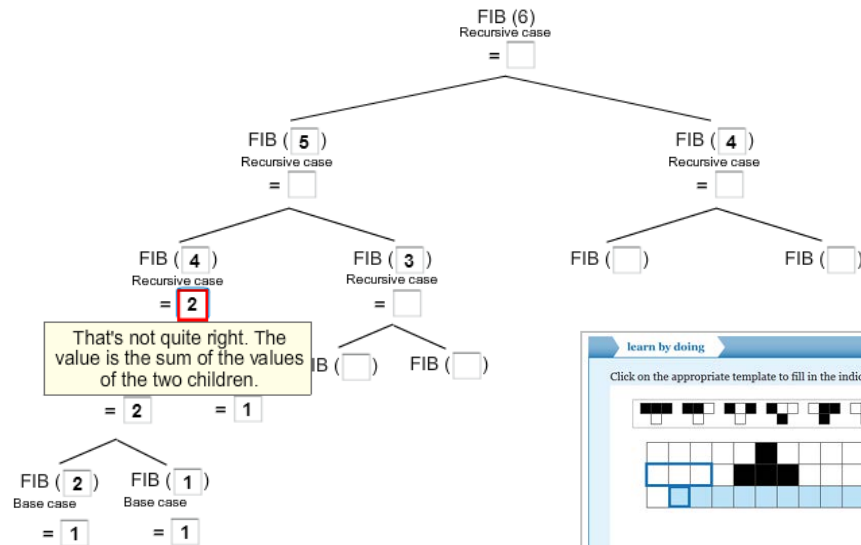
Reset this Activity

Learning Dashboard

did I get this

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Learning design as hypothesis



did I get this

MapReduce Phases

The following image illustrates the various phases of MapReduce. Match the letters (A,B,C,D and E) with their corresponding phase names below:

Map Phase Reduce Phase Merge Phase

Correct. The Reduce Operation refers to the reduce function (or reducers) being applied to the merged intermediate outputs.

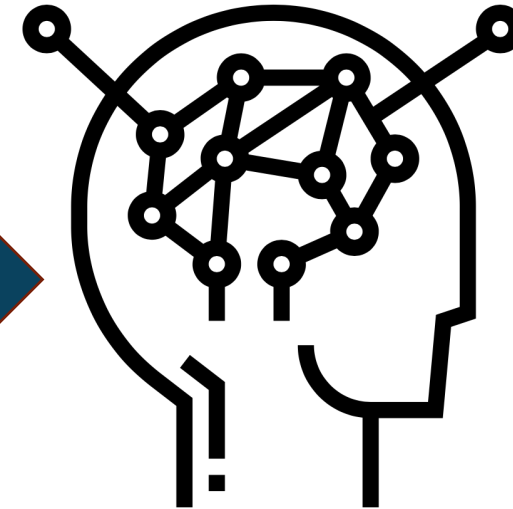
Learning Dashboard

learn by doing

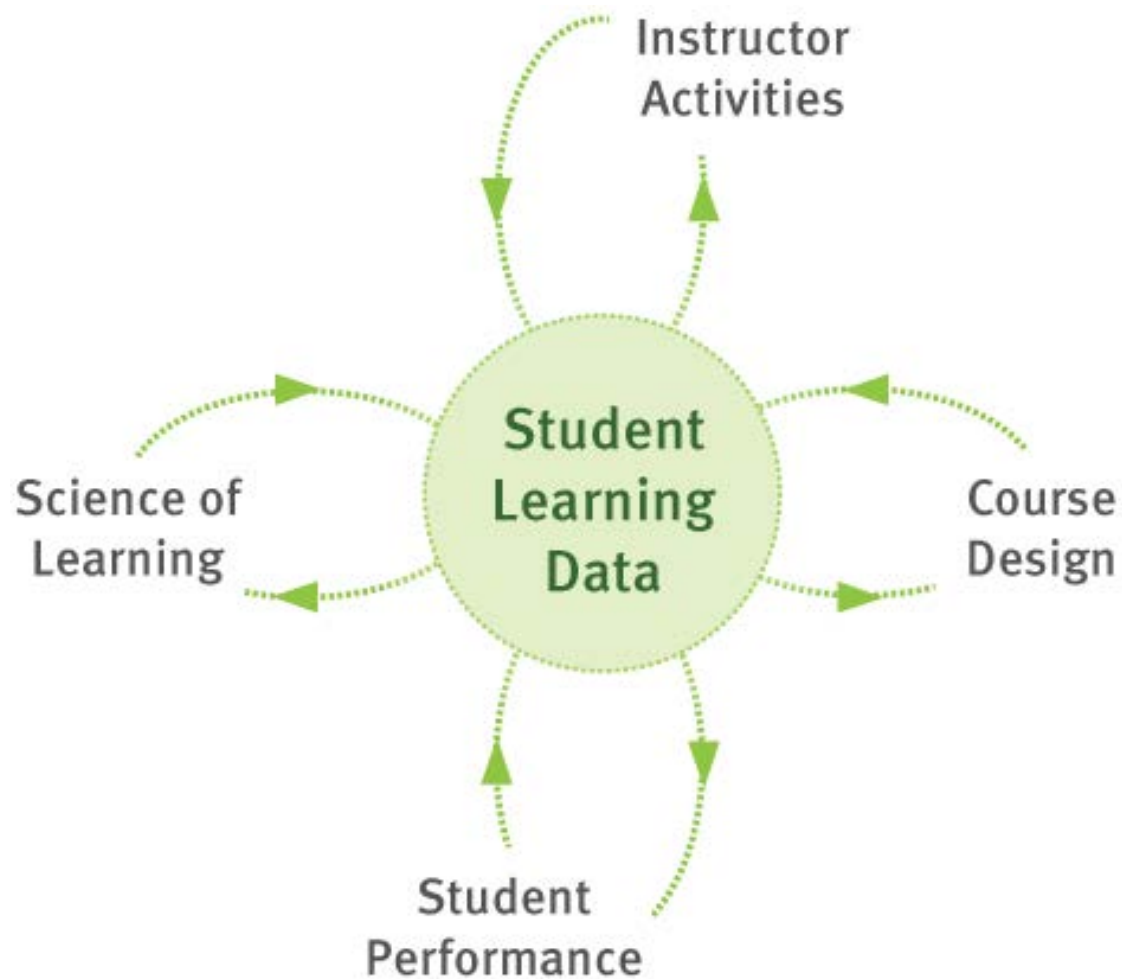
Click on the appropriate template to fill in the indicated cell in the next generation.

NEXT GROUP

continue this over and over to see how the automaton develops over generations.



Data drives powerful Feedback Loops



Instrumented



- Data Collection
- NOT Click Stream
- Learner Interactions
- Semantic Context
- Implies Design

What are potential sources of data?

- **The course itself**
- **Learner performance**
- **Learner usage**
- **Learner feedback**
- **Instructor feedback**

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Data and Analytics

Types of Data	Types of Analytics
Structural	Design Audit

Model



Structural data

- **Content**
 - **Practice Opportunities**
 - **Assessment Opportunities**
-
- **What is my model?**
 - **Does it reflect best practices?**
 - **Is my hypothesis complete enough for testing?**

Design Audit



Apply thinking skills principles Focus on job-specific thinking skills Design whole-task learning environments Make thinking processes explicit Base lessons on cognitive task analysis

Reword Remove

Pages 1

E-Learning to Build Problem Solving Skills

Skills 4 Add Existing Skill Create New Skill

0 2 ✓	Focus on job-specific thinking skills	🛒	🛒														
3 3 ✓	Design whole-task learning environments			🧪	🧪	🧪	🛒	🛒	🛒	🛒	🛒	🛒					
0 6 ✓	Make thinking processes explicit												🛒	🛒	🛒		
0 2 ✓	Base lessons on cognitive task analysis															🛒	🛒

Identify the characteristics of a good experiment

1 Page 1 Skill 7 1 ✓

**This was all before students worked with your
course materials...**

Data and Analytics

Types of Data	Types of Analytics
Structural	Design Audit
Use and Assessment	RISE

RISE:

Resource
Inspection
Selection
Enhancement



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LearnSphere Component

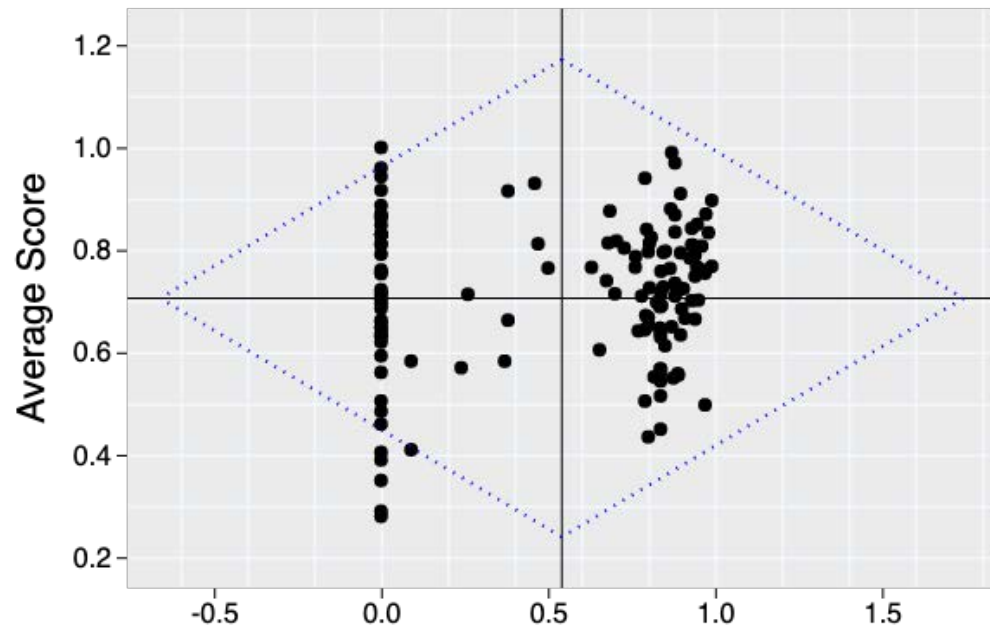
Inputs and workflow

	A	B	C
1	skill_id	Use/Practice	High Stakes
2	_u01_m01_i	0.916667	0
3	_u01_m01_s	1	0
4	_u01_m01_s	0.710909	0
5	_u02_m01_b	0.62	0
6	_u02_m01_r	0.96	0
7	_u02_m01_r	0.593333	0
8	_u02_m01_p	0.886667	0
9	_u02_m01_p	0.796452	0.8
10	_u02_m01_p	0.39	0
11	_u02_m01_p	0.634118	0.896667
12	_u02_m01_p	0.555714	0.89
13	_u02_m01_p	0.558571	0.888571
14	_u02_m01_c	0.915	0.38
15	_u02_m01_c	0.87	0.9725
16	_u02_m01_c	0.662857	0.38
17	_u02_m01_c	0.80375	0.728
18	_u02_m02_b	0.791667	0
19	_u02_m02_c	0.6475	0.835
20	_u02_m02_c	0.868571	0.88
21	_u02_m02_c	0.689	0.835
22	_u02_m02_c	0.824444	0.808889
23	_u02_m02_p	0.93	0.46
24	_u02_m02_p	0.876	0.685
25	u02 m02 r	0.485	0

Demonstration



Outputs and Analysis



High

Learning

Low

- High student prior knowledge
- Inherently easy learning outcome
- Highly effective content
- Poorly written assessment

- Effective resources
- Effective assessment
- Strong outcome alignment

- Low student motivation
- High life distraction
- Too much material
- Difficulty accessing resources

- Poorly designed resources
- Poorly written assessments
- Poor outcome alignment
- Difficult learning outcome

Low

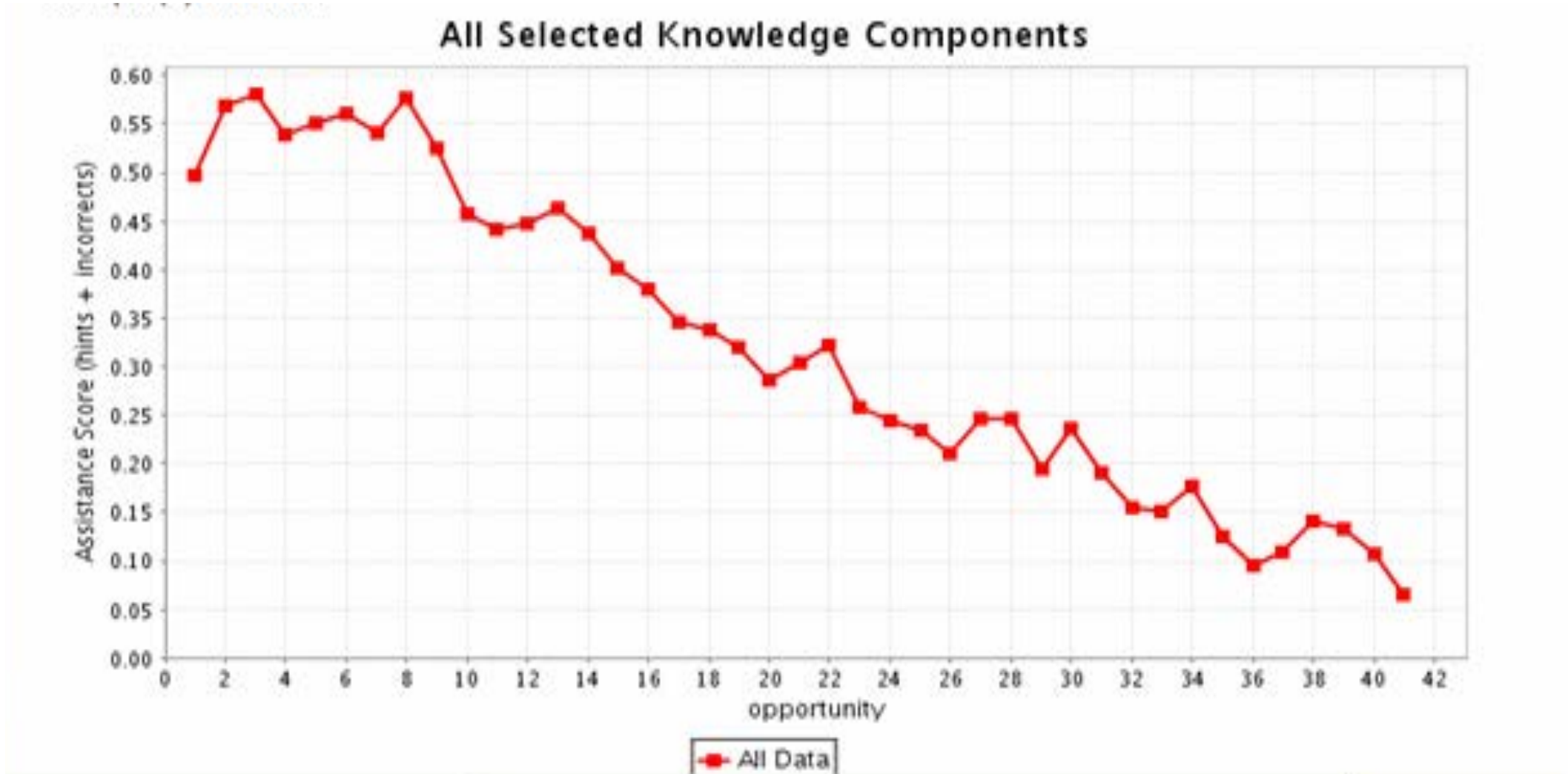
Content Use

High

Data and Analytics

Types of Data	Types of Analytics
Structural	Design Audit
Use and Assessment	RISE
Learner Interaction	Model Validation & Improvement

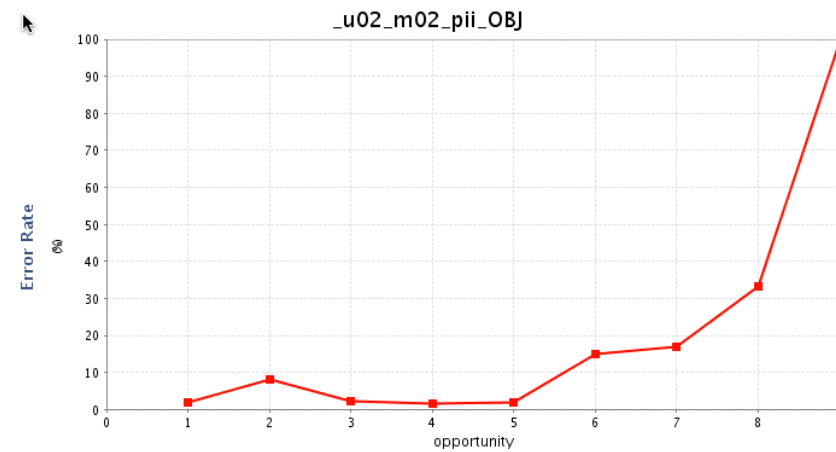
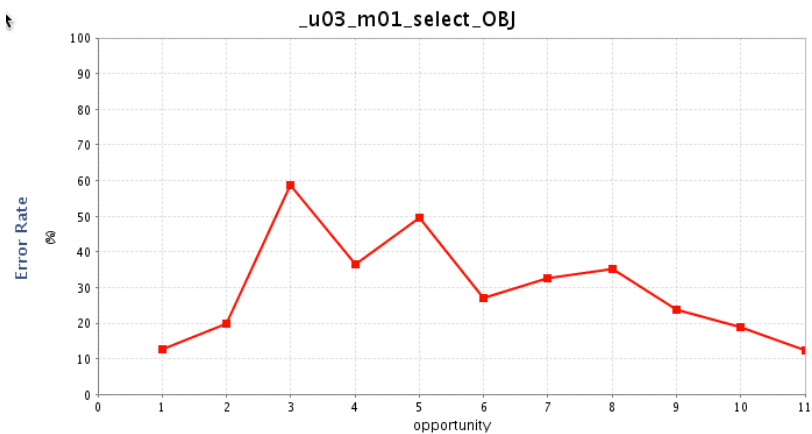
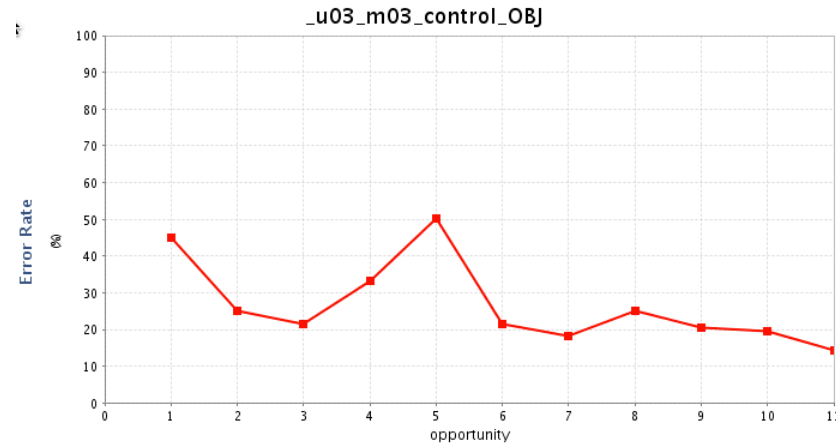
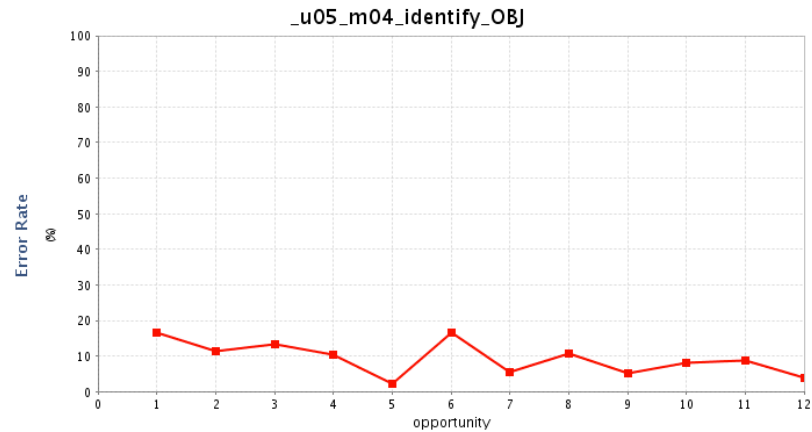
Model: Learning Curve Analysis



<http://learnsphere.org>

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Other Learning Curves

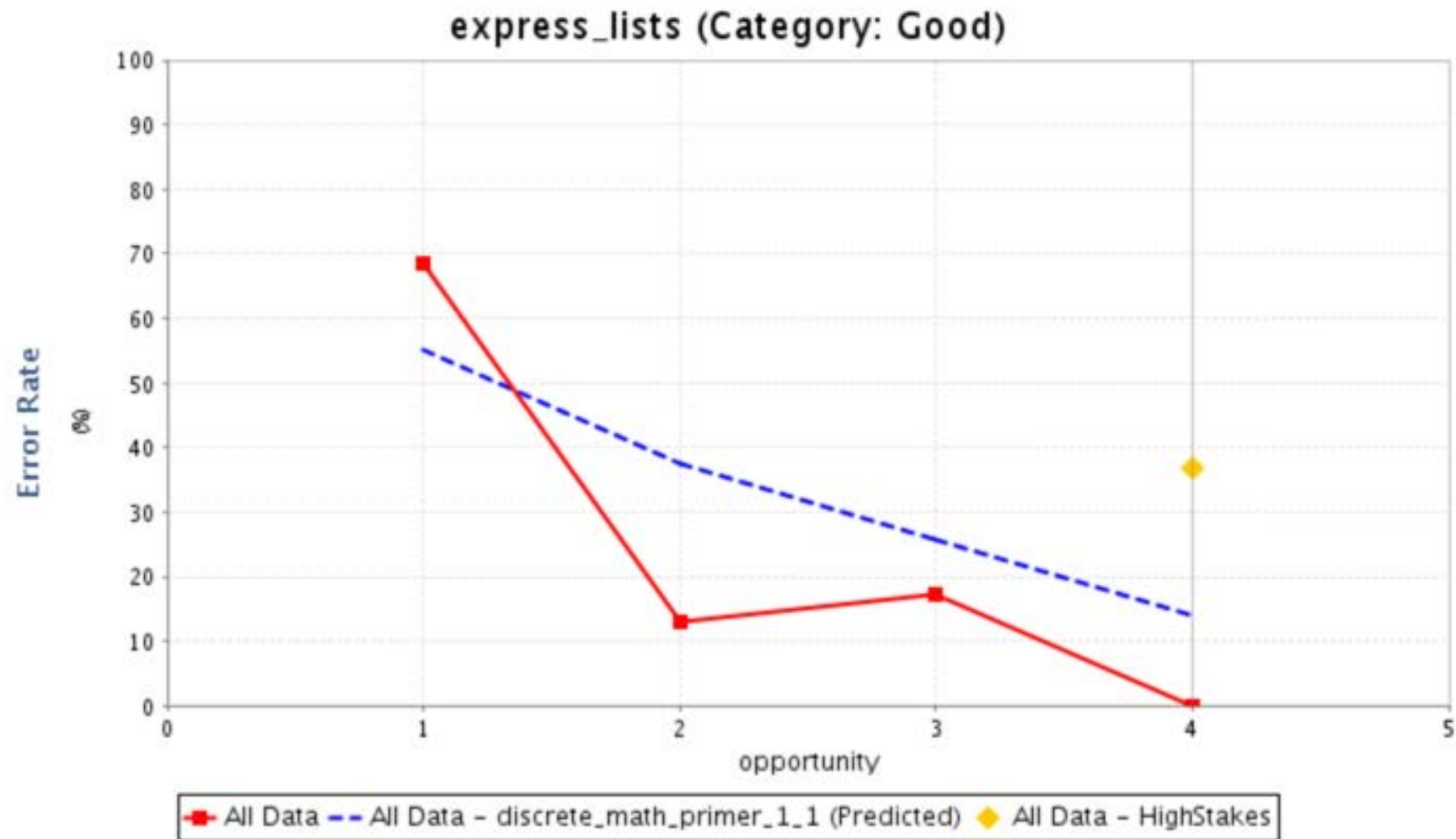


<http://learnsphere.org>

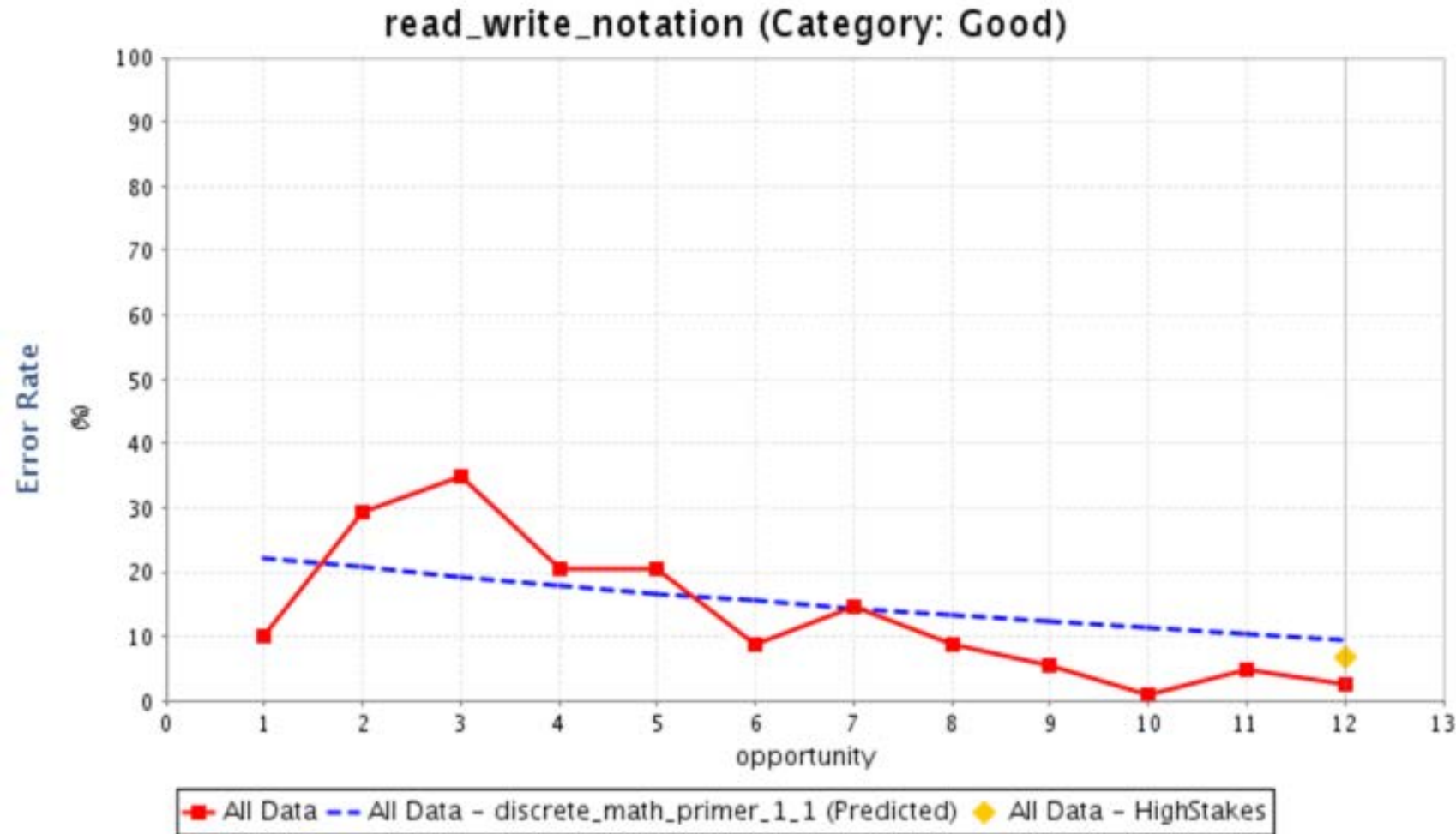
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Model: Does practice support assessment?

Discontinuity Analysis



Discontinuity Analysis



Data and Analytics

Types of Data	Types of Analytics
Structural	Design Audit
Use and Assessment	RISE
Learner Interaction	Model Validation & Improvement
Performance	Activity Improvement

Activity: Where can individual activities and questions be improved?

Activity Improvement

Overview

Objectives

All Resources

Computing@Carnegie Mellon

Unit 4: Information Literacy

Module 11: Introduction to Information ...

Module 12: University Libraries

Module 13: Understanding Information

Module 14: Effective Searching

Module 15: Evaluating Sources

Module 16: Academic Integrity

Exam-Readiness Quiz: Information Liter...

Unit 5: Safe Computing

Module 17: Introduction to Safe Computi...

Skill: Use the criteria of currency, relevance, point of view and authority to evaluate sources in relation to particular research goals and objectives.

Question: Point of View (represents multiple perspectives)	1493	0.86	98%	33%
Question: Currency (publication date)	1525	1.33	99%	13%
Question: Authority (reputable author)	1510	1.03	99%	36%
Question: This article is from Time magazine, but if the informat...	1530	0.46	99%	64%
Question: Relevance (related to your task)	1502	0.44	99%	65%
Question: Because information about the author is not listed, yo...	1515	0.41	99%	61%
Question: The information would be relevant if you were at whic...	1511	1.46	99%	22%
Question: The author's purpose in this article is to:	1517	0.55	99%	66%
Question: An article written by someone who has a doctoral deg...	1494	0.17	99%	84%
Question: Point of View (represents multiple perspectives)	1471	0.84	99%	33%
Question: The author's purpose in this article is to:	1509	0.54	99%	64%
Question: Authority (the author is reputable)	1467	1.21	99%	13%
Question: Relevance (related to your task)	1462	0.51	99%	57%
Question: Currency (publication date)	1549	0.67	99%	57%
Question: A lack of publication date in this article is irrelevant be...	1569	0.30	99%	72%
Question: The information would be relevant if you were at whic...	1487	1.28	99%	31%

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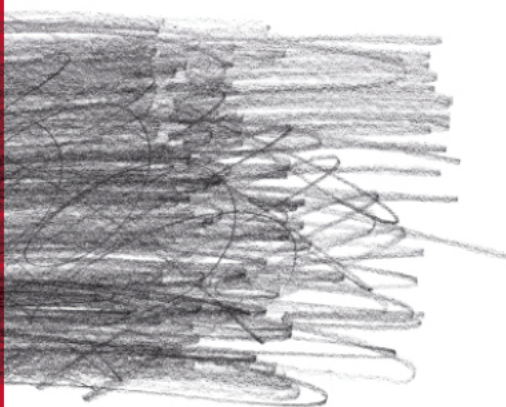
LEARNING
ENGINEERING
COMMUNITY

COMMUNITY

Carnegie
Mellon
University



HERBERT
SIMON



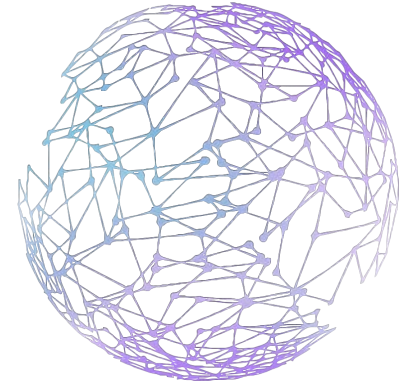
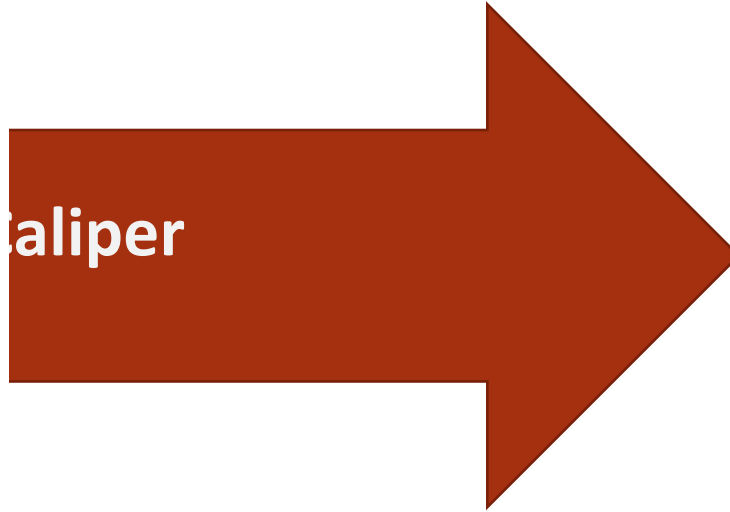
In Progress



SAIL Platform



Caliper



LearnSphere

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Handouts

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Design Audit

Use the criteria of currency, relevance, point of view and authority to evaluate sources in relation to particular research goals and objectives.

Reword Remove

Pages 7

- Evaluating Sources
- Putting It All Together
- Practice Using the Evaluation Criteria
- Currency
- Relevance
- Point of View
- Authority

Skills 6 Add Existing Skill Create New Skill

	A lack of publication date in ...	Relevance (related to your t...	Authority (the author is reput...	Currency (publication date)	An article written by someon...	The author's purpose in this ...	The information would be rel...	Point of View (represents m...	Because information about t...	The information would be rel...	Authority (reputable author)	The author's purpose in this ...	Relevance (related to your t...	Currency (publication date)	You are preparing for a clas...	The author's credentials are...	Based only on the citations, ...	An article you've found in th...	Which of the following is mo...	You're assigned to write an ...	You're assigned to write...	Whir
16 8 1 ✓ Use the criteria of currency, relevan...	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8 1 1 ✓ Evaluate a source on its currency.	✓		✓									✓	✓		✓					✓		✓
4 1 1 ✓ Evaluate a source on its point of vi...					✓	✓	✓			✓						✓				✓		
4 1 1 ✓ Evaluate a source on its relevance.	✓				✓			✓		✓							✓					
5 3 3 ✓ Evaluate a source on its authority.		✓	✓				✓	✓					✓	✓	✓	✓					✓	
0 4 4 ✓ Evaluate a source on all four dime...																	✓	✓	✓	✓		

Legend

Skills should have at least 3 summative questions
[Learn more about skills.](#)

relevan...

8 1 1 ✓ Evaluate... Rename Remove

Formative Question Coverage

This is the number of low stakes, practice questions that are associated with this skill.

8 1 1 ✓ Evaluate... Rename Remove

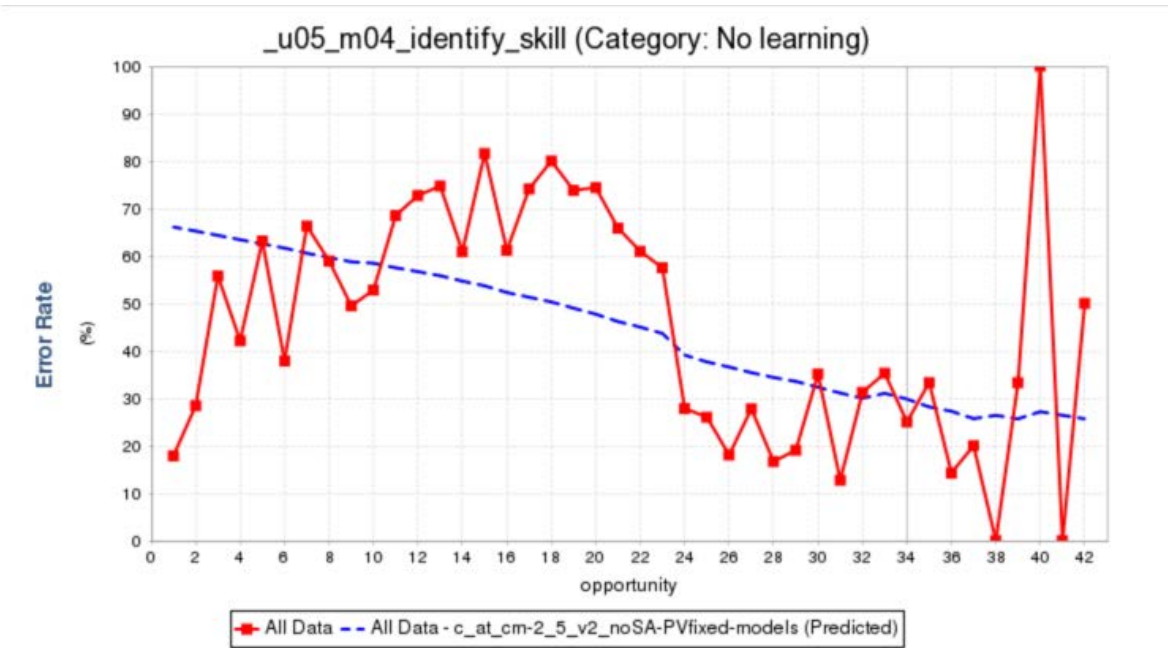
Summative Question Coverage

This is the number of high stakes, graded questions that are associated with this skill.

This includes the number of pool questions associated with this skill that a student is guaranteed to receive.

8 1 1 ✓ Evaluate... Rename Remove

Model Analytics: Learning Curve



[hide graph info](#)

Min and max opportunity cutoffs: -
Last opportunity categorized: 34

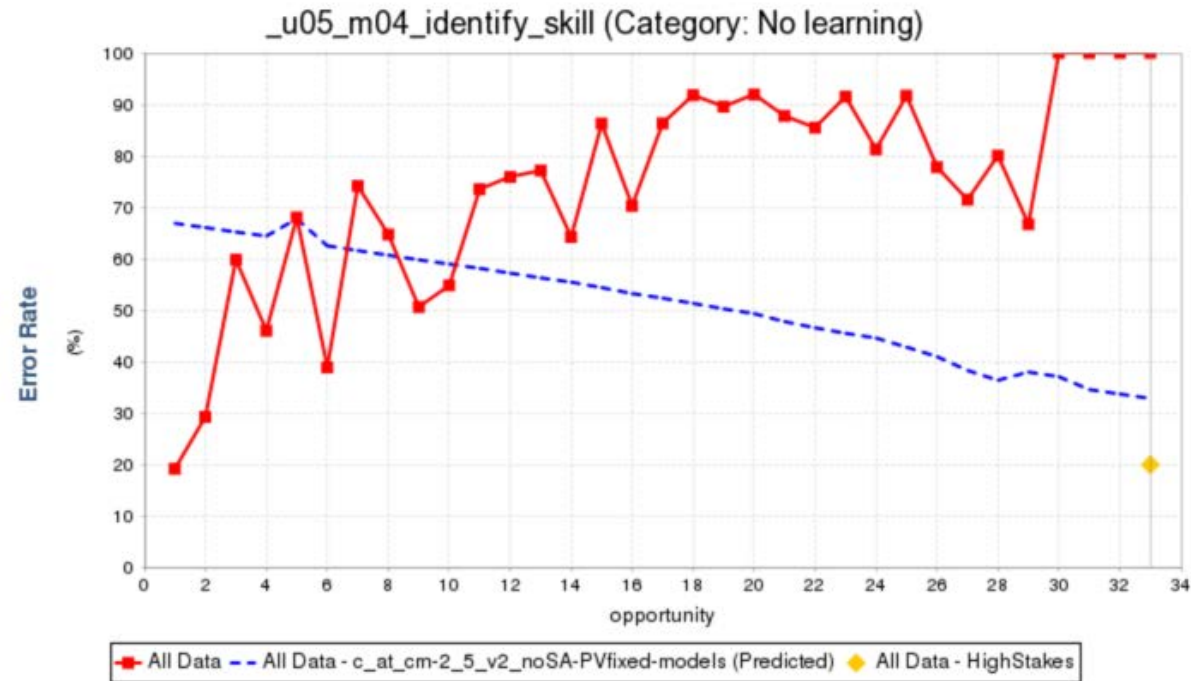
Included observations (dropped observations)
All Data: 2,694 (0)

[show point info](#)

[hide observation table](#)

All Data	
Opportunity Number	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Number of Observations	95 95 95 95 95 95 95 95 95 89 89 88 87 87 87 85 85 85 84 82
Opportunity Number	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
Number of Observations	82 82 80 79 73 72 72 66 63 57 55 48 17 12 9 7 5 3 3 2
Opportunity Number	41 42
Number of Observations	2 2

Model Analytics: Practice vs. Assessment

[hide graph info](#)

Min and max opportunity cutoffs: -
Last opportunity categorized: 33

Included observations (dropped observations)

All Data: 1,780 (0)

[show point info](#)[hide observation table](#)

		All Data																			
Opportunity Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Number of Observations	89	89	87	87	25	85	85	85	85	84	83	83	83	81	80	74	73	73	67	62	
Opportunity Number	21	22	23	24	25	26	27	28	29	30	31	32	33								
Number of Observations	57	55	47	16	12	9	7	5	3	3	2	2	2								

Activity Analytics

- Overview
- Objectives
- All Resources
- Computing@Carnegie Mellon
 - Unit 4: Information Literacy
 - Module 11: Introduction to Information ...
 - Module 12: University Libraries
 - Module 13: Understanding Information
 - Module 14: Effective Searching
 - Module 15: Evaluating Sources**
 - Module 16: Academic Integrity
 - Exam-Readiness Quiz: Information Liter...
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 - Module 17: Introduction to Safe Computi...

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Question: The information would be relevant if you were at whic...	1487	1.28	99%	31%

Legend

Number of attempts: 1493

The number of times a student submitted an answer for this question.

Relative difficulty: 0.86

The ratio of times a student either requested a hint or gave an incorrect answer to the total number of question interactions. A higher number indicates a lower proportion of correct answers, and a more difficult question.

Eventually correct: 98%

The percentage of students who eventually answered this question correctly.

First try correct: 33%

The percentage of students who answered this question correctly on the first attempt.

Design Audit

🎓 Use the criteria of currency, relevance, point of view and authority to evaluate sources in relation to particular research goals and objectives.

Reword Remove

📄 Pages 7

- 📄 Evaluating Sources
- 📄 Putting It All Together
- 📄 Practice Using the Evaluation Criteria
- 📄 Currency
- 📄 Relevance
- 📄 Point of View
- 📄 Authority

🔧 Skills 6 Add Existing Skill Create New Skill

	A lack of publication date in ...	Relevance (related to your t...	Authority (the author is reput...	Currency (publication date)	An article written by someon...	The author's purpose in this ...	The information would be rel...	Point of View (represents m...	Because information about t...	The information would be rel...	Authority (reputable author)	The author's purpose in this ...	Relevance (related to your t...	Currency (publication date)	You are preparing for a clas...	The author's credentials are...	Based only on the citations, ...	An article you've found in th...	Which of the following is mo...	You're assigned to write an ...	You're assigned to write...	Whir
16 🧑 8 ✓ Use the criteria of currency, relevan...	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑
8 🧑 1 ✓ Evaluate a source on its currency.	🧑		🧑									🧑	🧑		🧑					🧑		🧑
4 🧑 1 ✓ Evaluate a source on its point of vi...					🧑	🧑	🧑		🧑							🧑				🧑		
4 🧑 1 ✓ Evaluate a source on its relevance.		🧑				🧑			🧑		🧑						🧑					
5 🧑 3 ✓ Evaluate a source on its authority.			🧑	🧑				🧑	🧑					🧑	🧑	🧑	🧑				🧑	
0 🧑 4 ✓ Evaluate a source on all four dime...																	🧑	🧑	🧑	🧑		

Legend

Skills should have at least 3 summative questions
[Learn more about skills.](#)

relevan...

8 🧑 1 ✓ Evaluate... Rename Remove

🔧 Formative Question Coverage

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8 🧑 1 ✓ Evaluate... Rename Remove

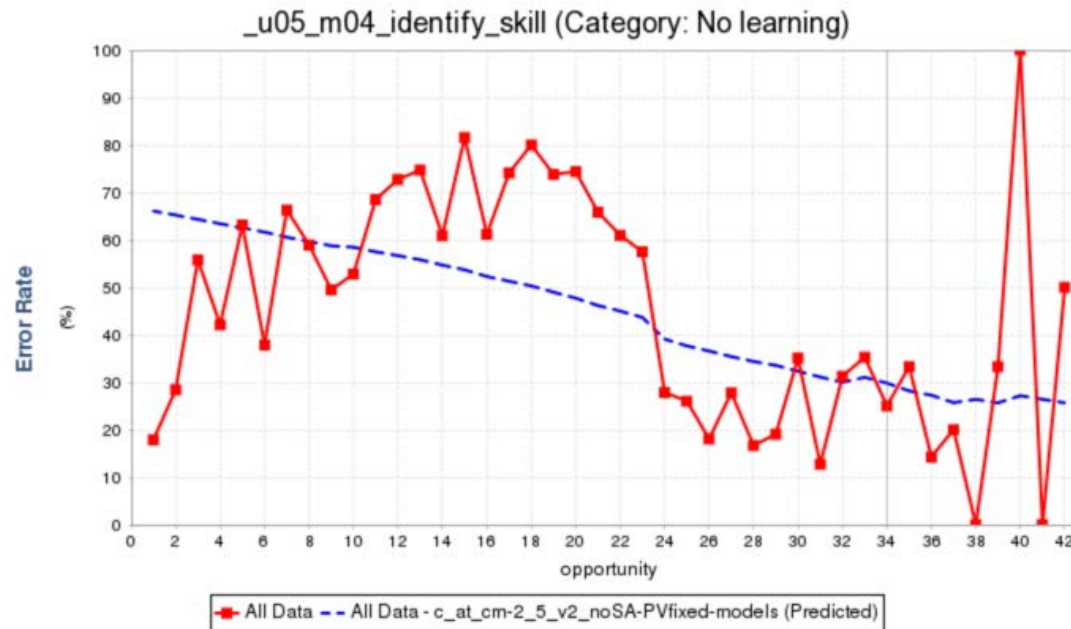
✓ Summative Question Coverage

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8 🧑 1 ✓ Evaluate... Rename Remove

Model Analytics: Learning Curve

[hide graph info](#)

Min and max opportunity cutoffs: -
Last opportunity categorized: **34**

Included observations (dropped observations)

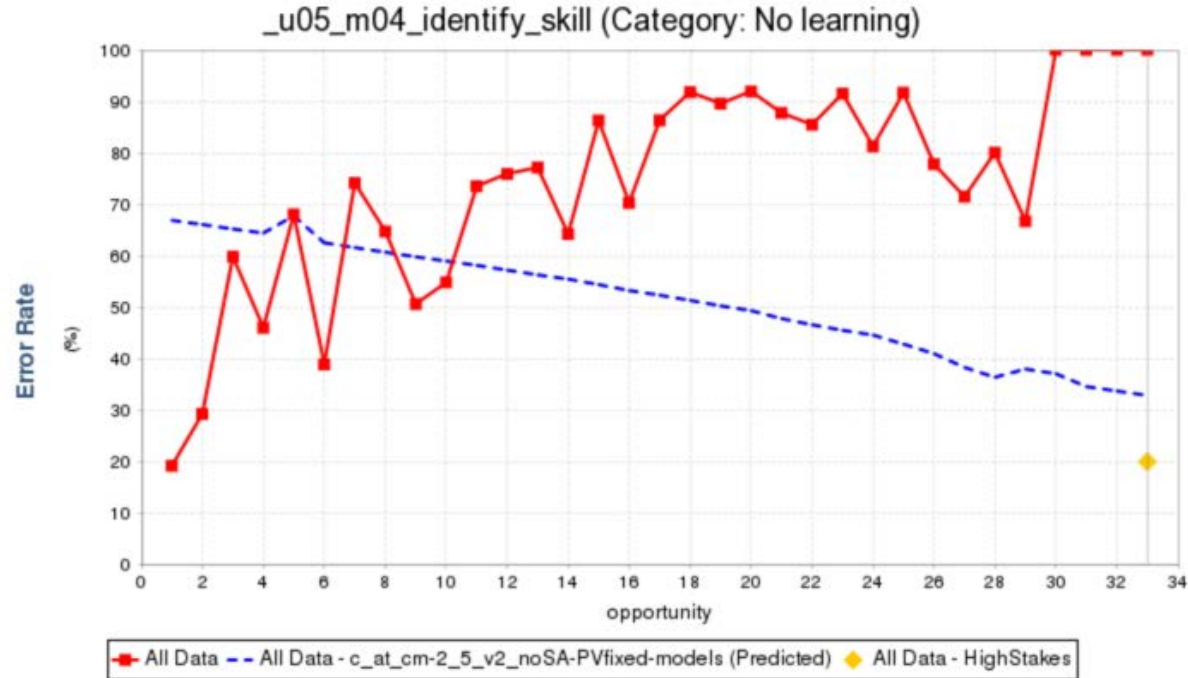
All Data: 2,694 (0)

[show point info](#)

hide observation table

		All Data																			
Opportunity Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Number of Observations	95	95	95	95	95	95	95	95	95	89	89	88	87	87	87	85	85	85	84	82	
Opportunity Number	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
Number of Observations	82	82	80	79	73	72	72	66	63	57	55	48	17	12	9	7	5	3	3	2	
Opportunity Number	41	42																			
Number of Observations	2	2																			

Model Analytics: Practice vs. Assessment



[hide graph info](#)

Min and max opportunity cutoffs: -
Last opportunity categorized: 33

Included observations (dropped observations)
All Data: 1,780 (0)

[show point info](#)

[hide observation table](#)

All Data																				
Opportunity Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Number of Observations	89	89	87	87	25	85	85	85	85	84	83	83	83	81	80	74	73	73	67	62
Opportunity Number	21	22	23	24	25	26	27	28	29	30	31	32	33							
Number of Observations	57	55	47	16	12	9	7	5	3	3	2	2	2							

Activity Analytics

- Overview
- Objectives
- All Resources
- Computing@Carnegie Mellon
 - Unit 4: Information Literacy
 - Module 11: Introduction to Information ...
 - Module 12: University Libraries
 - Module 13: Understanding Information
 - Module 14: Effective Searching
 - Module 15: Evaluating Sources**
 - Module 16: Academic Integrity
 - Exam-Readiness Quiz: Information Liter...
 - Unit 5: Safe Computing
 - Module 17: Introduction to Safe Computi...

Skill: Use the criteria of currency, relevance, point of view and authority to evaluate sources in relation to particular research goals and objectives.

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Question: The information would be relevant if you were at whic...	1487	1.28	99%	31%

Legend

Number of attempts: 1493

The number of times a student submitted an answer for this question.

Relative difficulty: 0.86

The ratio of times a student either requested a hint or gave an incorrect answer to the total number of question interactions. A higher number indicates a lower proportion of correct answers, and a more difficult question.

Eventually correct: 98%

The percentage of students who eventually answered this question correctly.

First try correct: 33%

The percentage of students who answered this question correctly on the first attempt.

Extra

Carnegie Mellon University
The Simon Initiative

Module 2

Examining Relationships



Learning Objectives



Classify a data analysis situation (involving two variables) according to the "role type classification," and state the appropriate display and/or numerical measures that should be used in order to summarize the data. [Show Sub-Learning Objectives]



Produce a two-way table, and interpret the information stored in it about the association between two cat. variables by comparing conditional percents.

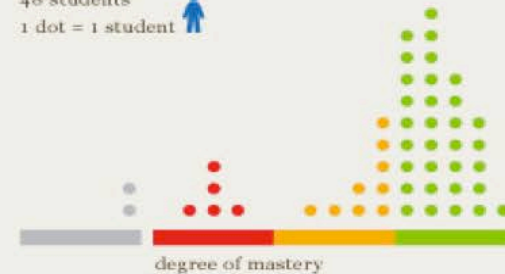


Classify a data analysis situation (involving two variables) according to the "role type classification," and state the appropriate display and/or numerical measures that should be used in order to summarize the data. [Hide Sub-Learning Objectives]



Predicted Mastery by Student

48 students
1 dot = 1 student



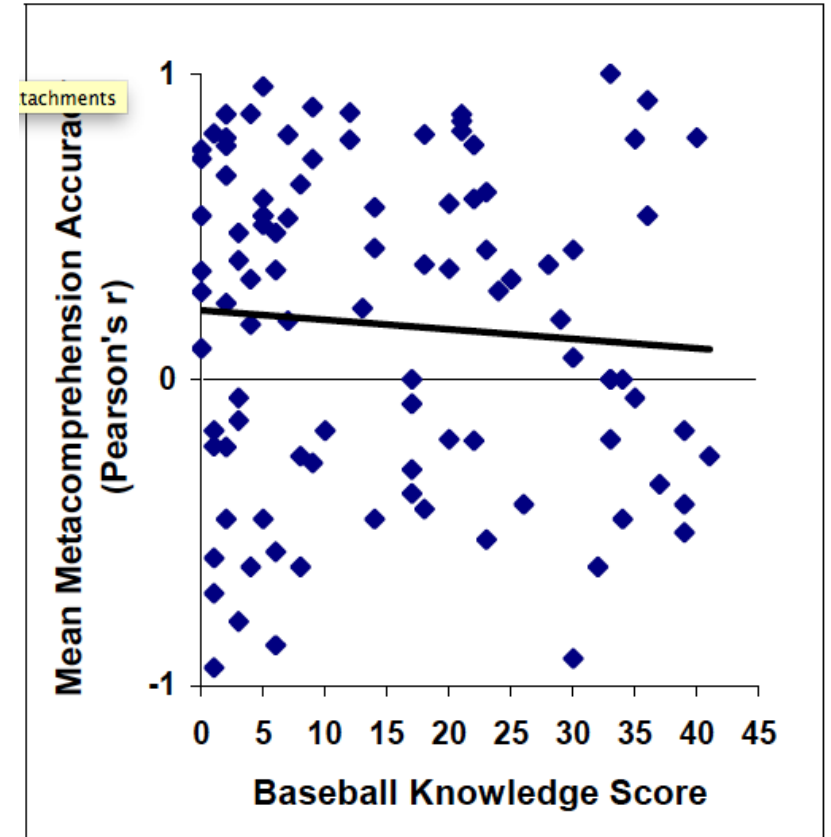
Class Accuracy by Sub-Learning Objective

- Identify relevant variables
- Classify variable's role**
- Classify variable's type
- Identify correct case
- State appropriate display
- State appropriate numerical ...



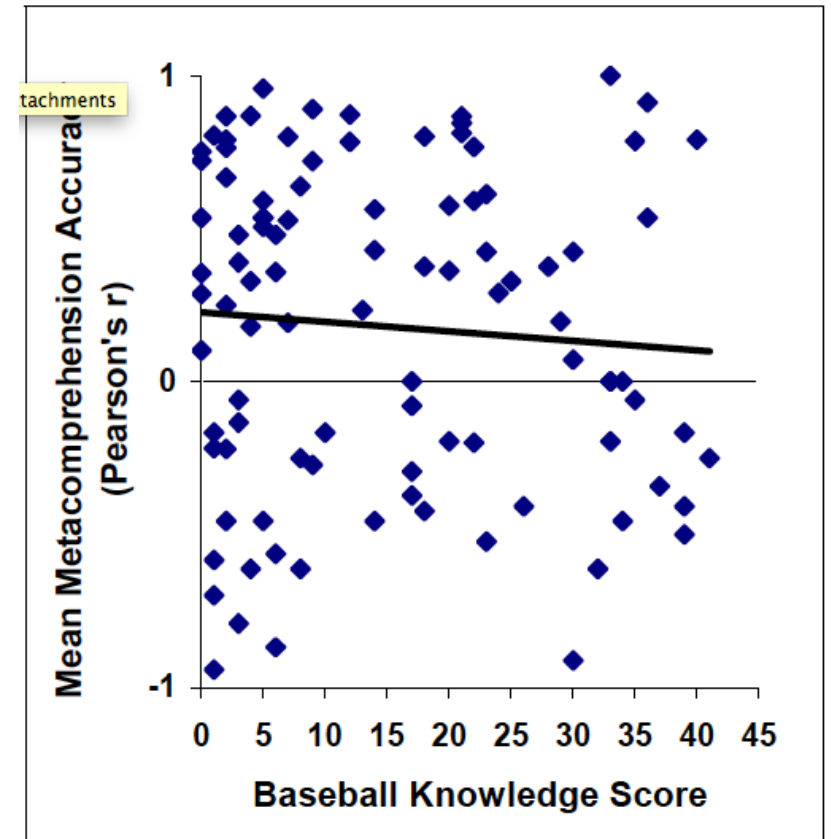
Do we know when we are learning?

- Students are poor at judging what they learned



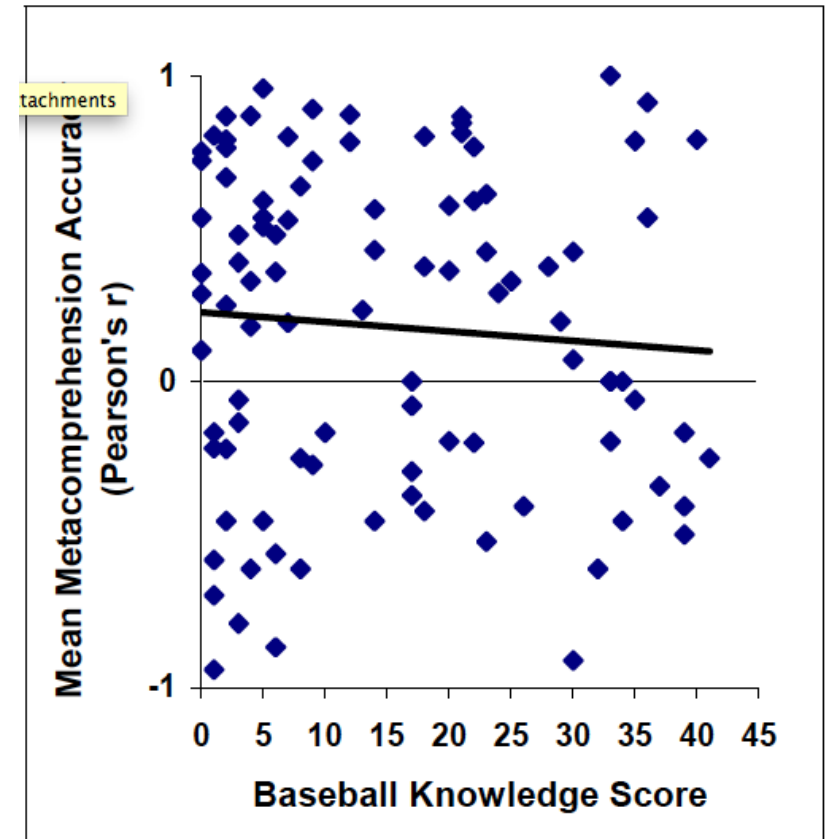
Do we know when we are learning?

- Students are poor at judging what they learned
- Liking is not learning



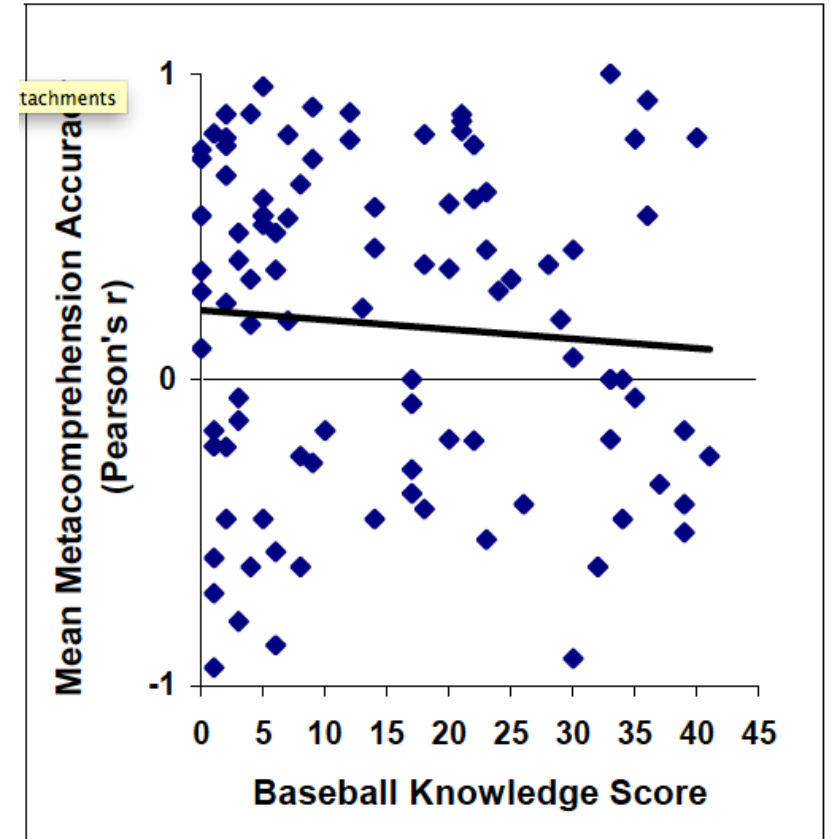
Do we know when we are learning?

- Students are poor at judging what they learned
- Liking is not learning
- Why? Students have insufficient mental resources to learn and monitor their own learning



Do we know when we are learning?

- Students are poor at judging what they learned
- Liking is not learning
- Why? Students have insufficient mental resources to learn and monitor their own learning



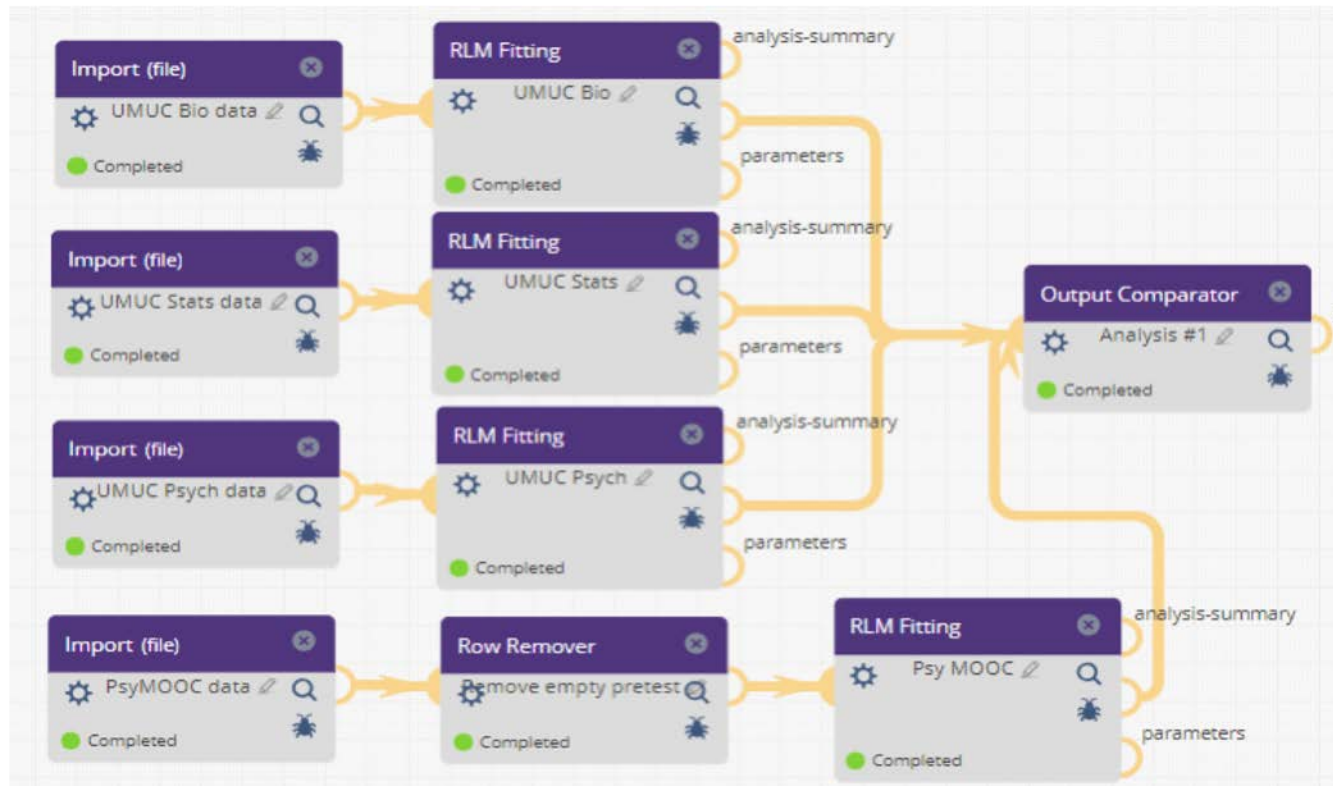
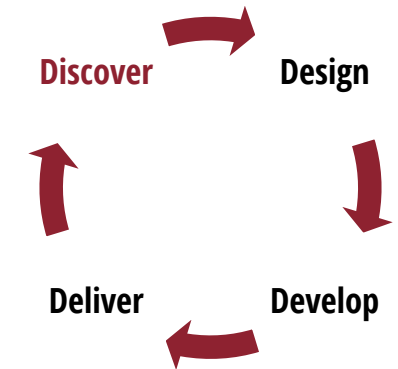
We experience *illusions of knowing and learning*

Carnegie Mellon University
The Simon Initiative

Why?

Learning is mostly outside our conscious awareness

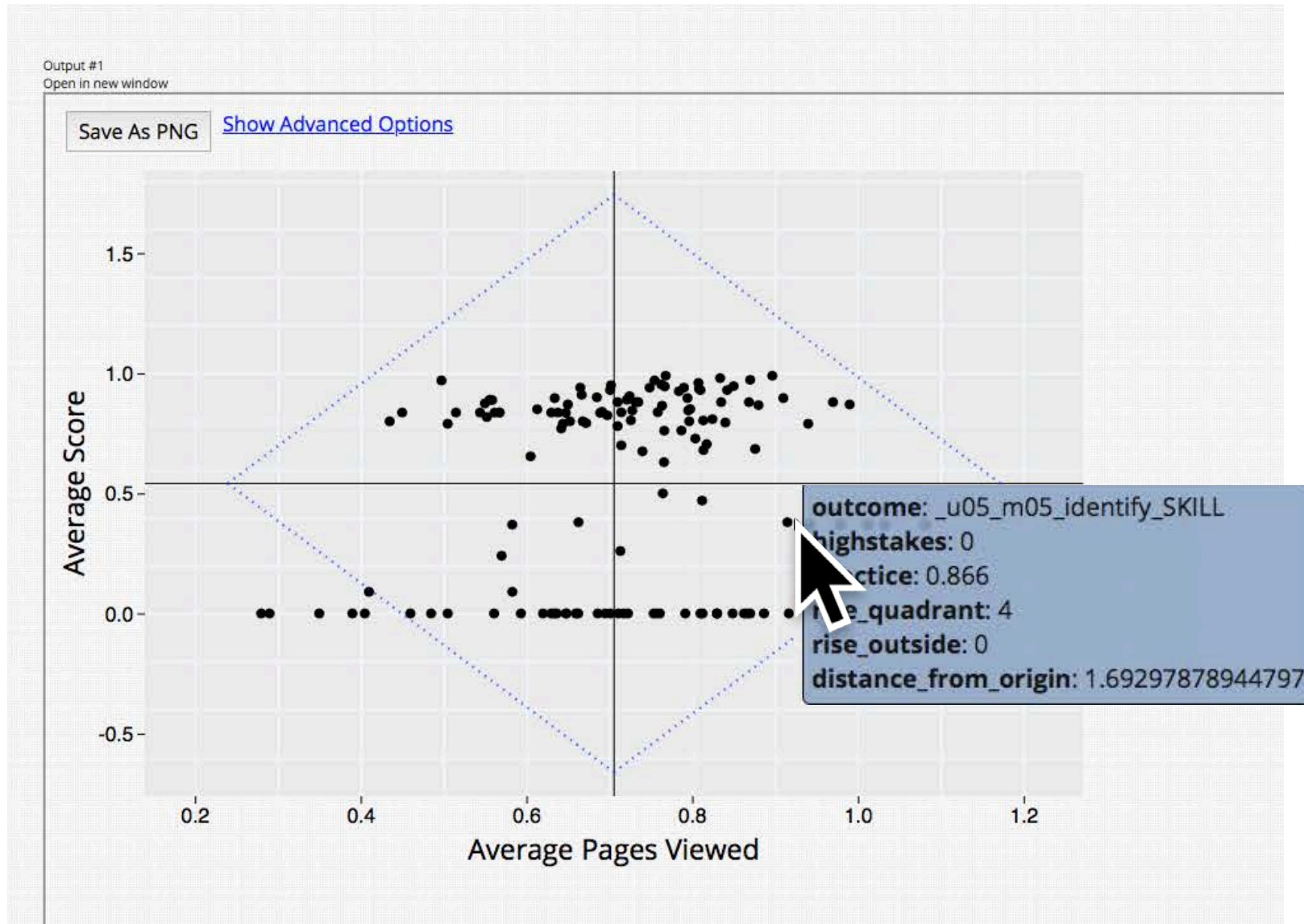
Discovery: Does doer effect apply across courses?



Which learning resources are making the most difference in your courses?

Try this workflow on your data at [LearnSphere.org](https://learnsphere.org)

A - RISE



A - Design Audit

Skill: Use the criteria of currency, relevance, point of view and authority to evaluate sources in relation to particular research goals and objectives.

🎓 Use the criteria of currency, relevance, point of view and authority to evaluate sources in relation to particular research goals and objectives.

Reword

Remove

📄 Pages 7

- 📄 Evaluating Sources
- 📄 Putting It All Together
- 📄 Practice Using the Evaluation Criteria
- 📄 Currency
- 📄 Relevance
- 📄 Point of View
- 📄 Authority

🛠 Skills 6 [Add Existing Skill](#) [Create New Skill](#)

16 🧑 8 ✓ Use the criteria of currency, relevan...
A lack of publication date in ...
Relevance (related to your t...
Authority (the author is reput...
Currency (publication date)
An article written by someon...
The author's purpose in this ...
The information would be rel...
Point of View (represents m...
Because information about t...
The information would be rel...
Authority (reputable author)
The author's purpose in this ...
Relevance (related to your t...
This article is from Time ma...
Currency (publication date)
You are preparing for a clas...
The author's credentials are...
Based only on the citations, ...
An article you've found in th...
Which of the following is mo...
You're assigned to write an ...
You're assigned to write an ...
You're assigned to write an ...
Whir

Legend

Skills should have at least 3 summative questions
[Learn more about skills.](#)

! 8 🧑 1 ✓ Evaluate... [Rename](#) [Remove](#)

🛠 Formative Question Coverage

This is the number of low stakes, practice questions that are associated with this skill.

! 8 🧑 1 ✓ Evaluate... [Rename](#) [Remove](#)

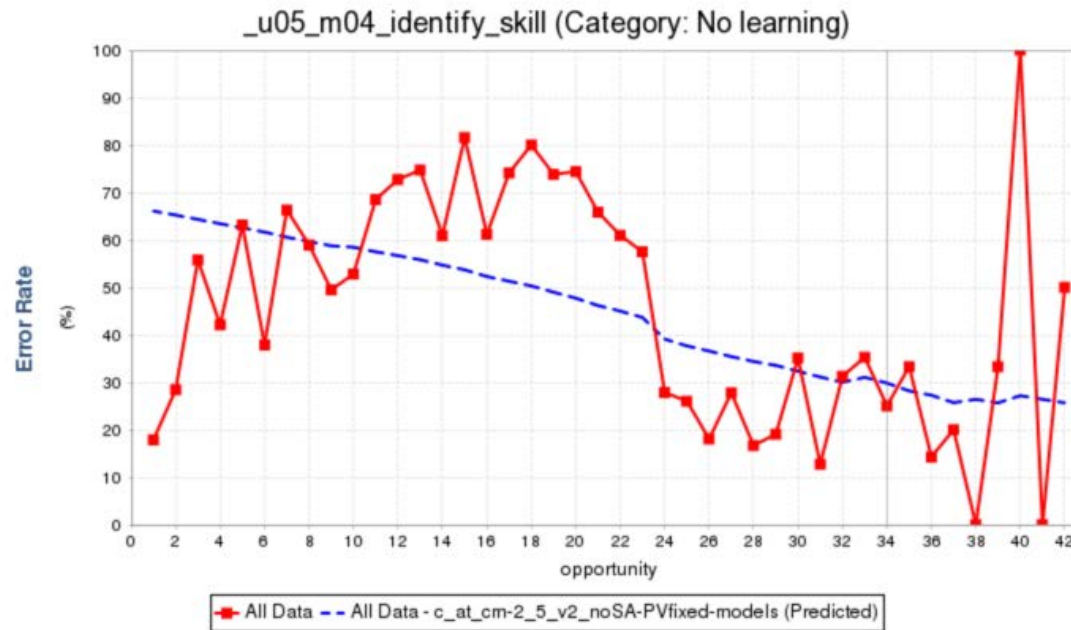
✓ Summative Question Coverage

This is the number of high stakes, graded questions that are associated with this skill.

This includes the number of pool questions associated with this skill that a student is guaranteed to receive.

! 8 🧑 1 ✓ Evaluate... [Rename](#) [Remove](#)

A - Model Analytics: Learning Curve

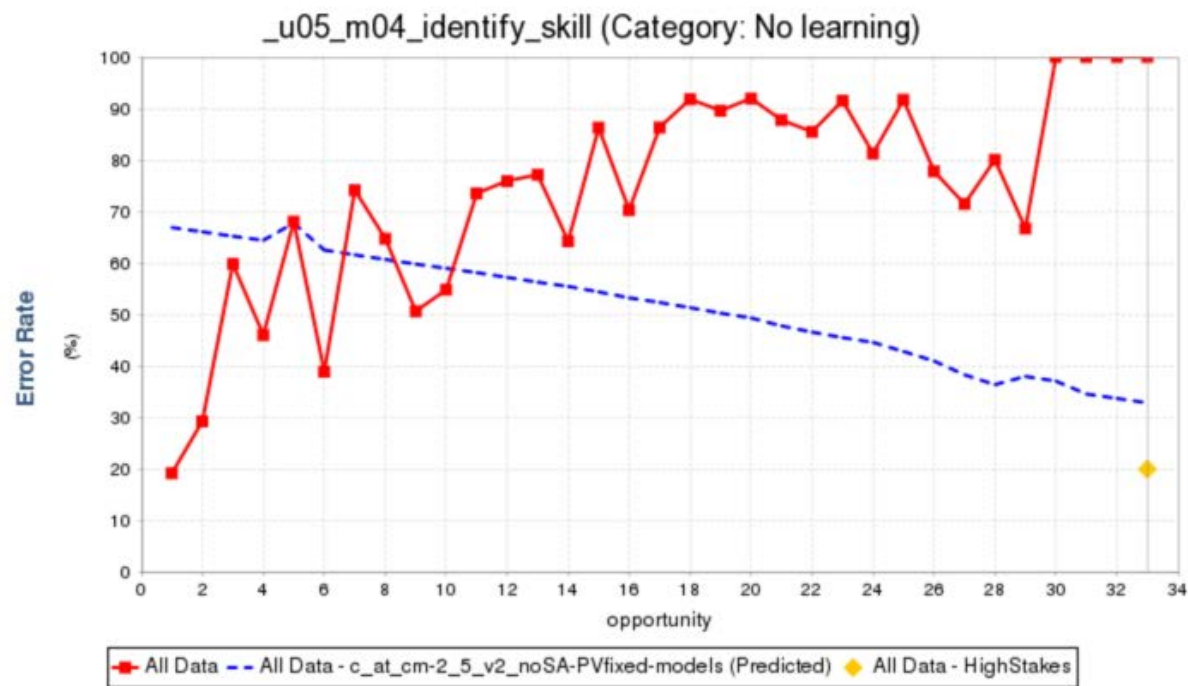
[hide graph info](#)

Min and max opportunity cutoffs: -
Last opportunity categorized: **34**

Included observations (dropped observations)
All Data: 2,694 (0)

[show point info](#)[hide observation table](#)[illegible]

A - Model Analytics: Practice vs. Assessment



[hide graph info](#)

Min and max opportunity cutoffs: -
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Included observations (dropped observations)
All Data: 1,780 (0)

[show point info](#)

[hide observation table](#)

All Data	
Opportunity Number	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Number of Observations	89 89 87 87 25 85 85 85 85 84 83 83 83 81 80 74 73 73 67 62
Opportunity Number	21 22 23 24 25 26 27 28 29 30 31 32 33
Number of Observations	57 55 47 16 12 9 7 5 3 3 2 2 2

B - Design Audit

_u05_m04_Evaluate_currency
 _u05_m04_Evaluate_pov
 _u05_m04_Evaluate_relevance
 _u05_m04_Evaluate_authority
 _u05_m04_Evaluate_Comprehensive

Evaluate a source on its currency.
 Evaluate a source on its point of view.
 Evaluate a source on its relevance.
 Evaluate a source on its authority
 Evaluate a source on all four dimensions.

🎓 Use the criteria of currency, relevance, point of view and authority to evaluate sources in relation to particular research goals and objectives.

Reword

Remove

📄 Pages 7

- 📄 Evaluating Sources
- 📄 Putting It All Together
- 📄 Practice Using the Evaluation Criteria
- 📄 Currency
- 📄 Relevance
- 📄 Point of View
- 📄 Authority

🔧 Skills 6 Add Existing Skill Create New Skill

	A lack of publication date in ...	Relevance (related to your t...	Authority (the author is reput...	Currency (publication date)	An article written by someon...	The author's purpose in this ...	The information would be rel...	Point of View (represents m...	Because information about t...	The information would be rel...	Authority (reputable author)	The author's purpose in this ...	Relevance (related to your t...	Currency (publication date)	You are preparing for a clas...	The author's credentials are...	Based only on the citations, ...	An article you've found in th...	Which of the following is mo...	You're assigned to write an ...	You're assigned to write...	Whic
16 🧑 8 ✓ Use the criteria of currency, relevan...	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑	🧑
8 🧑 1 ✓ Evaluate a source on its currency.	🧑		🧑									🧑	🧑		🧑					🧑		🧑
4 🧑 1 ✓ Evaluate a source on its point of vi...					🧑	🧑	🧑		🧑							🧑				🧑		
4 🧑 1 ✓ Evaluate a source on its relevance.		🧑				🧑			🧑		🧑						🧑					
5 🧑 3 ✓ Evaluate a source on its authority.			🧑	🧑				🧑	🧑					🧑	🧑	🧑	🧑				🧑	
0 🧑 4 ✓ Evaluate a source on all four dime...																	🧑	🧑	🧑	🧑		

Legend

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[Learn more about skills.](#)

relevance...

8 🧑 1 ✓ Evaluate... Rename Remove

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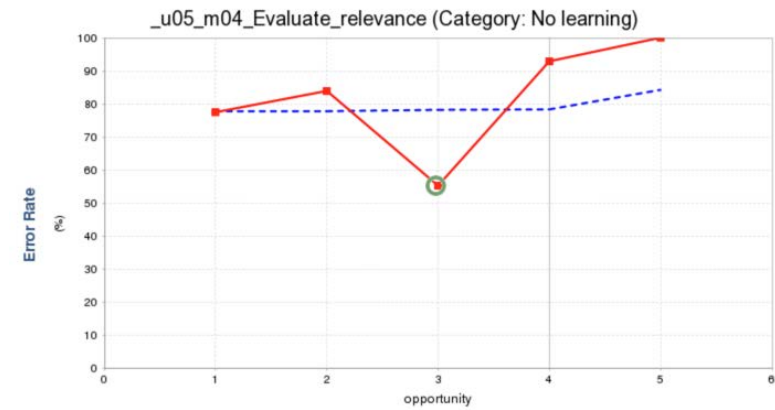
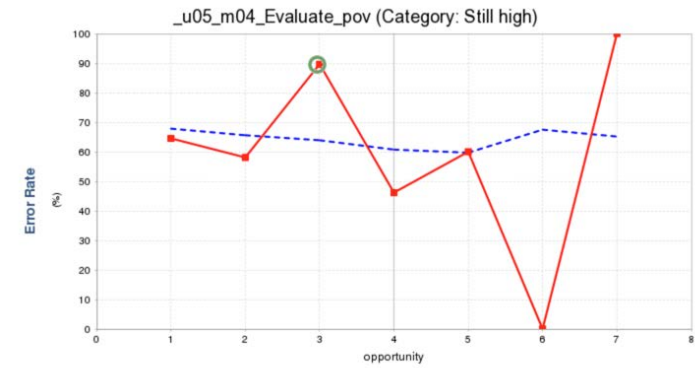
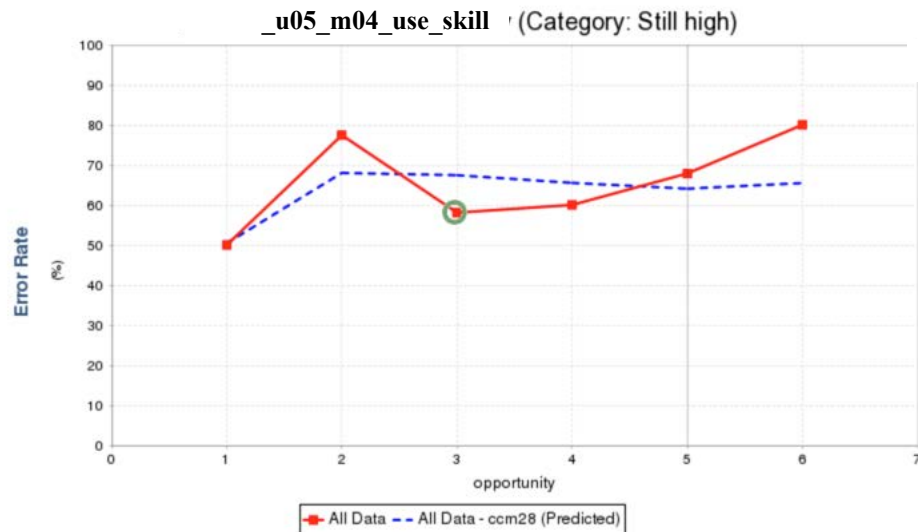
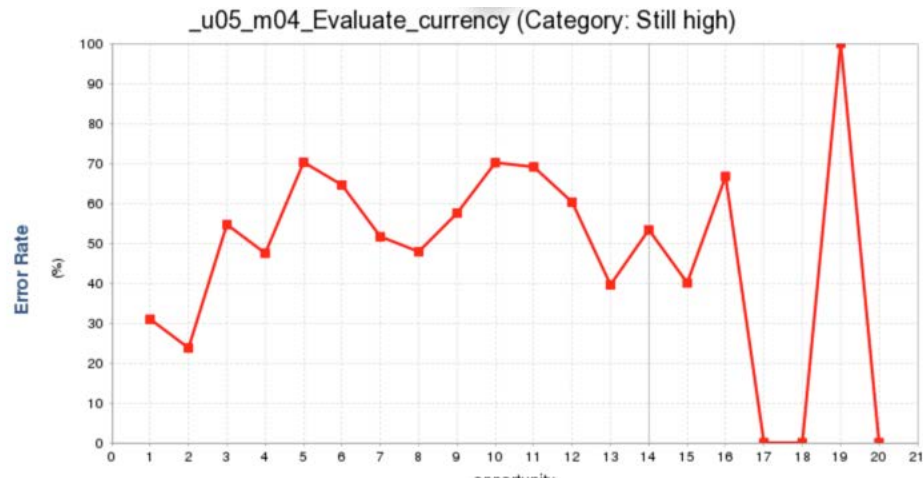
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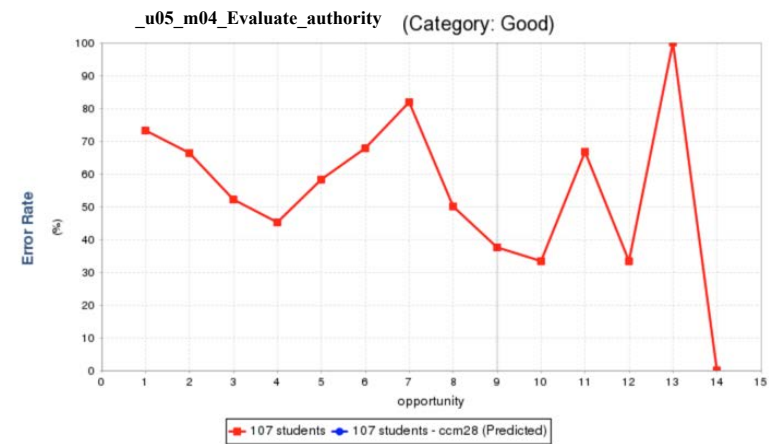
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B - Learning Curves



_u05_m04_Evaluate_authority



B – Practice vs. Assessment

B - Activity Analytics

Overview

Objectives

All Resources

Computing@Carnegie Mellon

Unit 4: Information Literacy

Module 11: Introduction to Information ...

Module 12: University Libraries

Module 13: Understanding Information

Module 14: Effective Searching

Module 15: Evaluating Sources

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